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EXAMINER	
NEGIN, RUSSELL SCOTT	
ART UNIT	**PAPER NUMBER**
1631	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/066,516	CATTELL, HERBERT F	
	Examiner	Art Unit	
	Russell S. Negin	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11,13-28 and 36-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,13-27 and 36-38* is/are rejected.

7)☒ Claim(s) *28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Comments

Applicants' amendments and request for reconsideration in the communication filed on 8 March 2007 are acknowledged and the amendments are entered.

Claims 1-11, 13-28 and 36-38 are pending and examined in the current Office action.

Claim Rejections - 35 USC § 112

The rejection of claims 1-11 and 22-28 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn due to amendments made by applicant to the set of claims filed on 8 March 2007.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following rejection is newly applied:

Claims 1, 3-4 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Cattell et al. [International Genome Sequencing and Analysis Conference, volume 12,

page 106, 2000] in light of the definition of "pipeline" [obtained online at www.geek.com on 21 May 2007].

Claim 1 is drawn to a method for simultaneous acquisition and analysis of separate microarray sets of data comprising three steps. The first step is reading a first chemical array. The second step is saving the array signal data. The third step is retrieving the saved signal data from the memory, wherein the feature characteristics are extracted from the signal data while a second chemical array is being read at said array reading station.

The abstract of Cattell et al. states:

> The analysis of microarrays has historically been an interactive task requiring the use to manually scan and feature extract each array individually. Typical points of user interaction include defining the scan area, aligning a grid to enable the feature finding process, flagging anomalous features and/or regions within the array, and the management of various files including design or layout files, scan files and results files. We designed an automated feature extraction system around our low detection limit, dual fluorescent scanner with autoloading capacity. This approach allows the user to load a carousel with arrays and 'walkaway' from the system, which is left to scan and feature extract unattended in a pipelined fashion. The user returns later to find all arrays scanned, extracted and processed, and ready for further analysis. Through the use of fiducials and barcodes, which together define the scan area and locate the array of the scanned image, our system simplifies image processing and eliminates file management issues. Automated methods in the feature extractor replace the remaining interactive steps such as feature finding and flagging of outlier features. The processed results include normalized signals, gene expression ratios, and associated errors and p-values that can be used in downstream analysis.

The method of Cattell et al. discloses reading and extracting data from multiple arrays in a pipelined fashion in an automated system. Cattell et al. suggest use of bar codes as array identifiers.

While Cattell et al. do not explicitly state the simultaneity of the reading and extracting data, they do mention the reading and extracting is accomplished in a

"pipelined" fashion. It is inherent that the term "pipeline" signifies this simultaneity in execution of the reading and extraction of data in the microarrays.

As is stated in the definition of "pipeline" [obtained online at www.geek.com on 21 May 2007]:

> Pipeline: The technique of processing multiple parts of an instruction at the same time. Many processors have two or more instruction pipelines—think of them as automobile assembly lines. As one instruction is executes, the next instruction if being decoded, and the one after that is being fetched from memory.

Consequently, it is inherent that pipelining means the simultaneous execution of tasks.

Claim 3 is dependent from claim 1 with the additional limitation of retrieving the saved signal data from the memory as the processor becomes available to perform feature extraction on the retrieved signal data for the chemical array, and extracts feature characteristics from the retrieved signal data.

Claim 4 is dependent from claim 3, with the extra limitation wherein multiple arrays are read is read and features are extracted therefrom.

The limitation is taught by the abstract of Cattell et al., which extracts features from arrays (plural) in a pipelined fashion.

Claim 11 is dependent from claim 1 with the extra limitation of saving a processor identification or feature extraction characteristic in a memory. The abstract of Cattell et al. describes the use of fiducials and barcodes for processor identification.

It is noted that Cattell et al. is a presentation at the International Genome Sequencing and Analysis Conference as a poster in 2000. The Office has been unable to obtain a copy of this poster. Since Cattell is the inventor of this application, applicant is requested to provide to the Office a copy of the poster. If a formal requirement under 37 CFR 1.105 is desired, it would be issued separately.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The rejections of claims 1-4 and 11 under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. in view of Kallioniemi et al. [US PGPUB 2003/0215936 A1] are withdrawn upon further consideration.

The rejections of claims 1 and 5-9 under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. in view of Kallioniemi et al. and further in view of Besemer et al. [US Patent 6,388,788] are withdrawn upon further consideration.

The rejections of claims 22 and 23 under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. in view of Kallioniemi et al. and further in view of Ambrose et al. [US Patent 6,399,365] are withdrawn upon further consideration.

The rejections of claims 1 and 10 under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. in view of Kallioniemi et al. and further in view of Rava et al. [US patent 5,874,219] are withdrawn upon further consideration.

The rejections of claims 36-38 under 35 U.S.C. 103(a) as being unpatentable over Harris et al. [US Patent 6,388,788] in view of Wang et al. [US PGPUB 2003/0099973] are withdrawn due to amendments made by applicant to the set of claims filed on 8 March 2007.

The rejections of claims 22 and 24-27 under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. in view of Kallioniemi et al. in view of Ambrose et al. and further in view of Besemer et al. are withdrawn upon further consideration.

The rejection of claims 22 and 28 under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. in view of Kallioniemi et al. in view of Ambrose et al. in view of Besemer et al. and further in view of Rava et al. is withdrawn due to arguments made by applicant on pages 17-18 of the Remarks of 8 March 2007.

The following rejections are newly applied:

35 U.S.C. 103 Rejection #1:

Claims 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. as applied to claims 1, 3-4, and 11 above in further view of Kallioniemi et al. [US PGPUB 2003/0215936 A1].

Claim 36 is dependent from claim 1 further comprising forwarding data representing the result of said reading and extracting. Claim 37 is dependent from claim 36 with the additional limitation of communication to a remote location.

Claim 38 teaches a method comprising receiving data and is interpreted to mean any type of data that could be made by the method of claim 1.

Cattell et al. as applied to claims 1, 3-4, and 11 above fails to show the forwarding and reception of data and the use of remote computers.

Kallioniemi et al. teaches a method and apparatus for a high-throughput, large scale molecular profiling of tissue specimens through analysis of arrays of donor data.

Kallioniemi et al. uses the Internet in combination with communication channels to disseminate array information to remote locations. As is stated in paragraph [0083]:

> A "communication channel" or "network" is a system, such as the Internet, which permits digital dissemination of digital information, such as digital images and test associated with the images.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice the multiple array reading method of Cattell et al. as applied to claims 1, 3-4 and 11 above in view of the remote analysis method of Kallioniemi et al. because the application of the use of the Internet to the arrays of Cattell et al. would have allowed a more thorough access and reception of array information.

35 U.S.C. 103 Rejection #2:

Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. as applied to claims 1, 3-4, and 11 above, and further in view of Besemer et al.

Claim 5 depends from claim 1 with the extra limitation of reading an array identifier in a memory.

Claim 6 depends from claim 5 with the extra limitation of having the ability of retrieving the identifier from the memory.

Claim 7 depends from claim 6 with the extra limitation of extracting feature characteristics of the first array by retrieving feature characteristics corresponding to the identifier.

Claim 8 depends from claim 5 with the extra limitation of having the identifier on the substrate.

Claim 9 depends from claim 7 with the extra limitation of having a sample processing station.

While Cattell et al. as applied to claims 1, 3-4, and 11 above describe processing multiple arrays, they do not go into detail about array labeling and identification.

Besemer et al. describes putting bar codes on the arrays for identification purposes. As stated in the last sentence of their abstract, "The housing also includes a bar code." The set of claims emphasizes computational analysis of these bar codes, as stated in column 23, lines 20-27:

> A package for hybridization, comprising... a housing including a fluid cavity constructed and arranged for hybridization of a target to a probe of said probe array located inside a fluid cavity, said housing including a bar code and being arranged for use with a detection system.

Column 23, lines 55-61 state:

> A package for supporting a probe array, comprising: an optically transparent chip comprising an array of different probes including biological polymers, immobilized on a surface of said chip; a housing constructed to receive said chip; and a bar code associated with said chip.

Consequently, Besemer et al. shows array identifiers on substrates in sample processing stations, the ability to receive the bar code from the chip, and the ability to receive array information from the bar codes.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice Cattell et al. as applied to claims 1, 3-4, and 11 above, in further view of Besemer et al. because while Cattell et al. states the necessary use of bar codes for identification, Besemer et al. goes into detail behind the use of bar codes for array identification and further advances the efficiency of microarray analysis.

35 U.S.C. 103 Rejection #3:

Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. as applied to claims 1, 3-4, and 11 above, and further in view of Ambrose et al.

Claim 22 is drawn to an apparatus for multiple array reading using multiple processors comprising a memory, multiple processors, and the simultaneous retrieving and acquisition of data.

Claim 23 is dependent from claim 22 with the extra limitation of a second processor automatically retrieving signal data for said first chemical array from the memory as the processor becomes available to perform feature characteristic extraction on the retrieved signal data for the chemical array, and extracts feature characteristics from the retrieved signal data.

While Cattell et al. describe processing multiple arrays, they do not go into detail about multiple processors.

The patent of Ambrose et al., entitled, "High throughput analysis of samples in flowing liquid," teaches such parallel processing. As stated in column 5, lines 43-47, "The corrected burst size distribution (BSD) in FIG 4A was obtained with 20 consecutive images using the conditions described in FIG 2 with a data acquisition time of 8.6 seconds. The data analysis time was ~1 minute per image. With highly parallel computing, this data time can be further reduced." Ambrose et al. continues on column 6, lines 52-57, "Another application for this technique is to characterize artificial chromosome clone libraries. Such libraries are widely used in gene mapping, DNA sequencing, and other types of genome analysis, and can consist of as many as hundreds of thousands of DNA clones in microtiter wells,..."

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice Cattell et al. as applied to claims 1, 3-4, and 11 above, in further view of Ambrose et al. because Ambrose et al. has the advantage of examining multiple processors for the purpose of more powerful, expedited analyses of microarrays.

35 U.S.C. 103 Rejection #4:

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. as applied to claims 1, 3-4, and 11 above, and further in view of Rava et al.

Claim 10 is dependent from claim 1 with the extra limitation of multiple reading stations.

While Cattell et al. as applied to claims 1, 3-4, and 11 above describe processing multiple arrays, they do not go into detail about multiple reading stations.

The patent of Rava et al., entitled, "Methods for concurrently processing multiple biological chip assays," states as its abstract:

> Methods for concurrently processing multiple biological chip assays by providing a biological chip plate comprising a plurality of test wells, each test well having a biological chip having a molecular probe array; introducing samples into the test wells; subjecting the biological chip plate to manipulation by a fluid handling device that automatically performs steps to carry out reactions between target molecules in the samples and probes; and subjecting the biological chip plate to a biological chip plate reader that interrogates the probe arrays to detect reactions between target molecules and probes.

Figure 1 illustrates such a plate with multiple readers. Column 2, lines 7-9 state, "In a further embodiment of the invention, the method also includes processing the results of the assay with a computer."

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice Cattell et al. as applied to claims 1, 3-4, and 11 above, in further view of Rava et al. because Rava et al. has the advantage of examining multiple arrays for the purpose of more powerful, expedited analyses of microarrays.

35 U.S.C. 103 Rejection #5:

Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. in view of Ambrose et al. as applied to claims 22-23 above, and further in view of Besemer et al.

Claim 24 is dependent from claim 22 with the extra limitation of having an array reader.

Claim 25 is dependent from claim 24 with the extra limitation of having a second processor with an array identifier.

Claim 26 is dependent from claim 25 with the extra limitation of having a third processor which communicates with a memory.

Claim 27 is dependent from claim 24 wherein the identifier reader reads associated array identifiers from an array substrate or a housing containing the array.

While Cattell et al. in view of Ambrose et al. describe processing multiple arrays using multiple processors, they do not go into detail about multiple array identifiers.

Besemer et al. describes putting bar codes on the arrays for identification purposes. As stated in the last sentence of their abstract, "The housing also includes a bar code." The set of claims emphasizes computational analysis of these bar codes, as stated in column 23, lines 20-27:

> A package for hybridization, comprising... a housing including a fluid cavity constructed and arranged for hybridization of a target to a probe of said probe array located inside a fluid cavity, said housing including a bar code and being arranged for use with a detection system.

Column 23, lines 55-61 state:

> A package for supporting a probe array, comprising: an optically transparent chip comprising an array of different probes including biological polymers, immobilized on a surface of said chip; a housing constructed to receive said chip; and a bar code associated with said chip.

Consequently, Besemer et al. shows array identifiers on substrates in sample processing stations, the ability to receive the bar code from the chip, and the ability to receive array information from the bar codes.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice Cattell et al. as in view of Ambrose et al. applied to claims 22 and 23 above, in further view of Besemer et al. because Besemer et al. goes into detail behind the use of bar codes for array identification and further advances the efficiency of microarray analysis.

35 U.S.C. 103 Rejection #6:

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cattell et al. as applied to claims 1, 3-4, and 11 above, and further in view of Li et al. [US Patent 6,571,005].

Claim 2 is dependent from claim 1 with the extra limitation of containing polypeptide or polynucleotide arrays.

While Cattell et al. as applied to claims 1, 3-4, and 11 above describe processing multiple arrays, they do not teach use of polypeptide or polynucleotide arrays.

As the title of the patent of Li et al., states, "Feature extraction and normalization algorithms for high-density oligonucleotide gene expression array data," the objective of this invention is to normalize and extract feature data from oligonucleotide microarrays.

The purpose of Li et al. states in column 1, lines 17-21:

> Monitoring gene expression using high-density microarrays is a technique in the study of cell functions and the associated biochemical pathways, candidate gene identification, cellular response to drug compounds, and classification of disease states.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice Cattell et al. as applied to claims 1, 3-4, and 11 above,

in further view of Li et al. because Li et al. has the advantage of examining multiple arrays with oligonucleotides for the purpose of normalization and feature extraction in order to address disease.

The following rejections are reiterated from the previous Office action of 12 December 2006:

35 U.S.C. 103 Rejection #7:

Claims 13, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al. in view of Rava et al. in view of Ambrose et al.

Claims 13 and 18 are drawn to a method for multiple array analysis with multiple reading and processing stations and a common memory hub.

Claim 16 also is drawn to a similar multiple array analysis method with plural processing stations and a common memory hub.

Claims 13, 16, and 18 do not require simultaneity in array acquisition and processing.

Harris et al. use arrays in that they scan multiple samples as stated on column 7, lines 54-58, "the present invention can perform high throughput assays requiring scanning multiple samples in a rapid and automatic manner. These samples may be individual micro-wells and may involve wells containing a liquid and live or fixed cells or components of cells." The storage and retrieval of data is described in column 19, lines 23-32, which state, "The present invention is capable of generating megabytes of data

per second, continuously. In one embodiment, the system is integrated with a fast, high density, high-volume storage device to which the data can be spooled in real-time for subsequent analysis." It is inherent that in order for one to process stored data, the data must be retrieved, either in real time as described in this invention, or subsequently.

The compounds being assessed in this invention include oligonucleotides, as stated in column 1, lines 50-55.

However, Harris et al. does not teach the use of multiple readers for arrays.

The patent of Rava et al., entitled, "Methods for concurrently processing multiple biological chip assays," states as its abstract, "Methods for concurrently processing multiple biological chip assays by providing a biological chip plate comprising a plurality of test wells, each test well having a biological chip having a molecular probe array; introducing samples into the test wells; subjecting the biological chip plate to manipulation by a fluid handling device that automatically performs steps to carry out reactions between target molecules in the samples and probes; and subjecting the biological chip plate to a biological chip plate reader that interrogates the probe arrays to detect reactions between target molecules and probes." Figure 1 illustrates such a plate with multiple readers. Column 2, lines 7-9 state, "In a further embodiment of the invention, the method also includes processing the results of the assay with a computer."

However, none of the above sources teach parallel processing.

The patent of Ambrose et al., entitled, "High throughput analysis of samples in flowing liquid," does teach such parallel processing. As stated in column 5, lines 43-47, "The corrected burst size distribution (BSD) in FIG 4A was obtained with 20 consecutive images using the conditions described in FIG 2 with a data acquisition time of 8.6 seconds. The data analysis time was ~1 minute per image. With highly parallel computing, this data time can be further reduced." Ambrose et al. continues on column 6, lines 52-57, "Another application for this technique is to characterize artificial chromosome clone libraries. Such libraries are widely used in gene mapping, DNA sequencing, and other types of genome analysis, and can consist of as many as hundreds of thousands of DNA clones in microtiter wells,..."

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice Harris et al. in view of Rava et al. in view of Ambrose et al. because while Rava et al. adds the advantage multiple reading stations for concurrent analysis of multiple plates, Ambrose adds the advantage multiple processing of microarray data for more efficient data analysis.

35 U.S.C. 103 Rejection #8:

Claims 14-15, 17, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al. in view of Rava et al. in view of Ambrose et al. as applied to claims 13, 16, and 18 above, in further view of Besemer et al.

Claim 14 is dependent from claim 13 wherein each of the read arrays is associated with a corresponding identifier, the method additionally comprising reading

the array identifiers at each of the multiple reading stations and saving each read array identifier in the common memory in association with the saved array signal data for the corresponding array.

Claim 15 is dependent from claim 14 additionally comprising for each of multiple arrays: retrieving the identifier from the common memory in association with the retrieved array signal data, and saving extracted feature characteristics for the array in a memory in association with the retrieved identifier.

Claim 17 is dependent from claim 14 wherein the associated array identifiers are on the array substrate, a housing carrying the array, or in a same package carrying the array.

Claim 19 is dependent from claim 18 additionally comprising receiving an array identifier with the array signal data for each corresponding array and saving both in association with one another.

Claim 20 is dependent from claim 19 wherein the array signal data for each array is retrieved based on a received communication of the identifier for the corresponding array.

Claim 21 is dependent from claim 18 additionally comprising, for each of multiple reading stations, receiving a reading station identification or characteristic at the hub station in association with an array signal data, and saving the received reading station identification or characteristic in a memory in association with the saved signal data for that array.

Harris et al. in view of Rava et al. in view of Ambrose et al. as applied to claims 13, 16, and 18 above fail to teach the use of identifiers and bar codes.

Besemer et al. describes putting bar codes on the arrays for identification purposes. As stated in the last sentence of their abstract, "The housing also includes a bar code." The set of claims emphasizes computational analysis of these bar codes, as stated in column 23, lines 20-27:

> A package for hybridization, comprising... a housing including a fluid cavity constructed and arranged for hybridization of a target to a probe of said probe array located inside a fluid cavity, said housing including a bar code and being arranged for use with a detection system.

Column 23, lines 55-61 state:

> A package for supporting a probe array, comprising: an optically transparent chip comprising an array of different probes including biological polymers, immobilized on a surface of said chip; a housing constructed to receive said chip; and a bar code associated with said chip.

Consequently, Besemer et al. shows array identifiers on substrates in sample processing stations, the ability to receive the bar code from the chip, and the ability to receive array information from the bar codes.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice Harris et al. in view of Rava et al. in view of Ambrose et al. as applied to claims 13, 16, and 18, in further view of Besemer et al. thus resulting in the practice of the instantly claimed invention because Besemer et al. adds the advantage of bar code identification to the same technology of microarray processing and analysis.

Claim Objections

Claim 28 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 8 March 2007 have been fully considered but they are not persuasive. New grounds of rejection are applied.

Applicant first proposed arguments relating the first obviousness prior art rejection (i.e. instant claims 1-4 and 11 in the Office action mailed on 12 December 2006) on pages 8-12 of the Remarks of 8 March 2007.

Applicant argues on page 9 of the Remarks of 8 March 2007:

> The meaning of the term "pipelining" which one of skill in the art would draw both from common usage of the term and from reading the cited references would be the serial performance of steps to complete a task or assay.... Applicants submit that there is nothing implied in the term "pipelining" that would guide one of skill in the art towards making an invention in which two or more steps occur simultaneously. Rather the plain meaning of Cattell denotes the automated serial execution of steps for reading arrays.

This is not found persuasive, because the definition of the term "pipelining" in the art is known to be the simultaneous execution of multiple tasks. For example, the online definition of pipelining in the glossary of computer terms at geek.com states:

> Pipeline: The technique of processing multiple parts of an instruction at the same time. Many processors have two or more instruction pipelines—think of them as automobile assembly lines. As one instruction is executes, the next instruction if being decoded, and the one after that is being fetched from memory.

Consequently, pipelining signifies the simultaneous execution of tasks.

Applicant next argues that the application of Kallioniemi et al. does not require simultaneity in execution of tasks related to microarrays on page 10 of the Remarks of 8 March 2007. While this argument is found to be persuasive, the simultaneous operation of tasks is already shown in Cattell et al. (in light of the definition of "pipeline" above). Additionally, Kallioniemi et al. does not exclude the possibility of the simultaneous operation of the microarray processing system.

Applicant next proposed arguments relating the second obviousness prior art rejection (i.e. instant claims 1 and 5-9 in the Office action mailed on 12 December 2006) on pages 12-13 of the Remarks of 8 March 2007.

Applicant argues that because this rejection is based on the references of Cattell et al. in view of Kallioniemi et al., for the reasons argued in the first prior art rejection, the second prior art rejection should be withdrawn. For the reasons discussed above, the rejection is maintained.

Applicant next proposed arguments relating the third obviousness prior art rejection (i.e. instant claims 22-23 in the Office action mailed on 12 December 2006) on pages 13-14 of the Remarks of 8 March 2007.

Applicant argues that because this rejection is based on the references of Cattell et al. in view of Kallioniemi et al., for the reasons argued in the first prior art rejection, the second prior art rejection should be withdrawn. For the reasons discussed above, this argument is not persuasive.

Applicant next argues that:

> Ambrose merely teaches the post-acquisition processing of an image with multiple processors to reduce time for data crunching.... Ambrose fails to teach a processor which directs the reading of an array and a second processor which directs feature extraction, as claimed.

This is not persuasive because the parallel processing method of Ambrose et al. when used in combination with the reading and feature extraction of Cattell et al. teaches all of the elements of the claimed invention. It is obvious to execute the reading and extraction of Cattell et al. by use of the multiple processors of Ambrose et al. because Ambrose et al. has the ability of to execute multiple processors in parallel and save time in processing the data of Cattell et al.

Applicant next proposed arguments relating the fourth obviousness prior art rejection (i.e. instant claims 1 and 10 in the Office action mailed on 12 December 2006) on pages 14-15 of the Remarks of 8 March 2007.

Applicant argues that because this rejection is based on the references of Cattell et al. in view of Kallioniemi et al., for the reasons argued in the first prior art rejection, the second prior art rejection should be withdrawn. For the reasons discussed above, this argument is not persuasive.

Applicant next argues that:

> Rava does not in fact indicate multiple readers, but only a single reader of a plate containing multiple chips...

This is not persuasive because claims 1 and 10 do not claim multiple readers; claim 10 merely claims "multiple reading stations." Applicant does not consider the

interpretation of the claim as multiple reading stations being read by the same array reader.

Applicant next proposed arguments relating the fifth obviousness prior art rejection (i.e. instant claims 36-38 in the Office action mailed on 12 December 2006) on pages 15-16 of the Remarks of 8 March 2007.

While applicant argues that the amendments to claim 36-37 overcome the instant rejection, no amendments have been proposed for claim 38. Additionally, no arguments have been proposed against the rejection of claim 38. While the amendments to claims 36-37 overcome this instant rejection, the rejection of claim 38 is maintained.

Applicant next proposed arguments relating the sixth obviousness prior art rejection (i.e. instant claims 22 and 24-27 in the Office action mailed on 12 December 2006) on pages 16-17 of the Remarks of 8 March 2007.

Applicant argues that because this rejection is based on the references of Cattell et al. in view of Kallioniemi et al., for the reasons argued in the first prior art rejection, the second prior art rejection should be withdrawn. For the reasons discussed above, this argument is not persuasive.

Applicant next argues that the use of the reference of Ambrose et al. is insufficient because of the reasoning discussed above in the third obviousness prior art rejection. For the reasons discussed above, this argument is not persuasive. The instant rejection is maintained.

Applicant next proposed arguments relating the seventh obviousness prior art rejection (i.e. instant claims 22 and 28 in the Office action mailed on 12 December 2006) on pages 17-18 of the Remarks of 8 March 2007.

These arguments are found to be persuasive and the rejection is withdrawn.

Applicant next proposed arguments relating the eighth obviousness prior art rejection (i.e. instant claims 13, 16, and 18 in the Office action mailed on 12 December 2006) on pages 18-19 of the Remarks of 8 March 2007.

Applicant argues that:

> Rava does not in fact indicate multiple readers, but only a single reader of a plate containing multiple chips...

This is not persuasive because claims 13, 16, and 18 do not claim multiple readers; claim 10 merely claims "multiple reading stations." Applicant does not consider the interpretation of the claim as multiple reading stations being read by the same array reader.

Applicant next proposed arguments relating the eighth obviousness prior art rejection (i.e. instant claims 13-15 and 17-21 in the Office action mailed on 12 December 2006) on pages 19-20 of the Remarks of 8 March 2007.

Applicant argues that:

> Rava does not in fact indicate multiple readers, but only a single reader of a plate containing multiple chips...

This is not persuasive because claims 13, 16, and 18 do not claim multiple readers; claim 10 merely claims "multiple reading stations." Applicant does not consider the interpretation of the claim as multiple reading stations being read by the same array reader.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the central PTO Fax Center. The faxing of such pages must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The Central PTO Fax Center Number is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Negin, Ph.D., whose telephone number is (571) 272-1083. The examiner can normally be reached on Monday-Friday from 7am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Ram Shukla, Supervisory Patent Examiner, can be reached at (571) 272-0735.

Information regarding the status of the application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information on the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RSN
28 May 2007

28 May 2007

SHUBO (JOE) ZHOU, PH.D.
PATENT EXAMINER